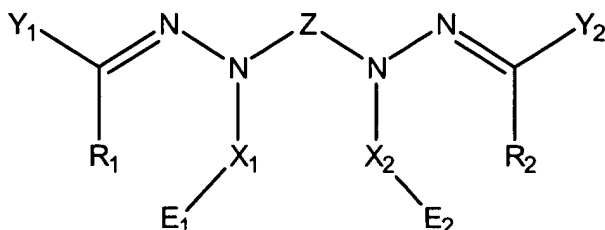


CLAIMS

What is claimed is:

1. An organophotoreceptor comprising an electrically conductive substrate and a photoconductive element on the electrically conductive substrate, the photoconductive element comprising:

(a) a charge transport material having the formula



where Y₁ and Y₂ are, each independently, an arylamine group;

R₁ and R₂ comprise, each independently, H, an alkyl group, an alkenyl group, a heterocyclic group, or an aromatic group;

X_1 and X_2 , each independently, are bridging groups;

E₁ and E₂ are, each independently, an epoxy group; and

Z is a linking group comprising an alkyl group, an alkenyl group, a heterocyclic group, or an aromatic group; and

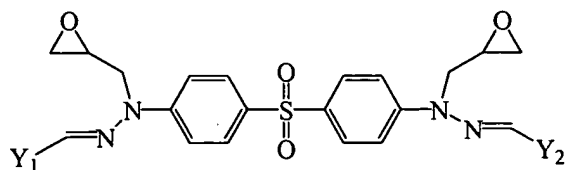
- (b) a charge generating compound.

2. An organophotoreceptor according to claim 1 wherein Z comprises an aromatic group.

3. An organophotoreceptor according to claim 1 wherein Y₁ and Y₂ are, each independently, a carbazolyl group, an (N,N-disubstituted)arylamine group, or a julolidinyl group.

4. An organophotoreceptor according to claim 1 wherein E₁ and E₂ are, each independently, an oxiranyl ring.

5. An organophotoreceptor according to claim 1 wherein the charge transport material is selected from the group of compounds represented by the following formula:



where Y_1 and Y_2 are, each independently, an arylamine group.

5

6. An organophotoreceptor according to claim 1 wherein X_1 and X_2 , each independently, have the formula $-(CH_2)_m-$, branched or linear, where m is an integer between 0 and 20, inclusive, and one or more of the methylene groups is optionally replaced by O, S, C=O, O=S=O, a heterocyclic group, an aromatic group, urethane, urea,
 10 an ester group, an NR_3 group, a CHR_4 group, or a CR_5R_6 group where R_3 , R_4 , R_5 , and R_6 comprise, each independently, H, hydroxyl group, thiol group, an alkyl group, an alkenyl group, a heterocyclic group, or an aromatic group.

7. An organophotoreceptor according to claim 1 wherein the
 15 photoconductive element further comprises a second charge transport material.

8. An organophotoreceptor according to claim 7 wherein the second charge transport material comprises an electron transport compound.

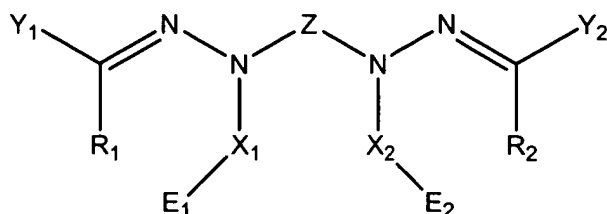
20 9. An organophotoreceptor according to claim 1 wherein the photoconductive element further comprises a binder.

10. An electrophotographic imaging apparatus comprising:

(a) a light imaging component; and

25 (b) an organophotoreceptor oriented to receive light from the light imaging component, the organophotoreceptor comprising an electrically conductive substrate and a photoconductive element on the electrically conductive substrate, the photoconductive element comprising:

(i) a charge transport material having the formula



where Y_1 and Y_2 are, each independently, an arylamine group;

R_1 and R_2 comprise, each independently, H, an alkyl group, an alkenyl group, a heterocyclic group, or an aromatic group;

5 X_1 and X_2 , each independently, are bridging groups;

E_1 and E_2 are, each independently, an epoxy group; and

Z is a linking group comprising an alkyl group, an alkenyl group, a heterocyclic group, or an aromatic group; and

(ii) a charge generating compound.

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11. An electrophotographic imaging apparatus according to claim 10 wherein Z comprises an aromatic group.

12. An electrophotographic imaging apparatus according to claim 10 wherein

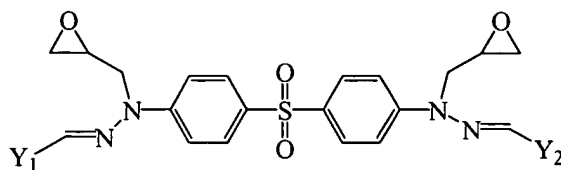
15 Y_1 and Y_2 are, each independently, a carbazolyl group, an (N,N-disubstituted)arylamine group, or a julolidinyl group.

13. An electrophotographic imaging apparatus according to claim 10 wherein

E_1 and E_2 are, each independently, an oxiranyl ring.

20

14. An electrophotographic imaging apparatus according to claim 10 wherein the charge transport material is selected from the group of compounds represented by the following formula:



25

where Y_1 and Y_2 are, each independently, an arylamine group.

15. An electrophotographic imaging apparatus according to claim 10 wherein X_1 and X_2 , each independently, have the formula $-(CH_2)_m-$, branched or linear, where m is an integer between 0 and 20, inclusive, and one or more of the methylene groups is optionally replaced by O, S, C=O, O=S=O, a heterocyclic group, an aromatic group, urethane, urea, an ester group, an NR_3 group, a CHR_4 group, or a CR_5R_6 group where R_3 , R_4 , R_5 , and R_6 comprise, each independently, H, hydroxyl group, thiol group, an alkyl group, an alkenyl group, a heterocyclic group, or an aromatic group.

16. An electrophotographic imaging apparatus according to claim 10 wherein the photoconductive element further comprises a second charge transport material.

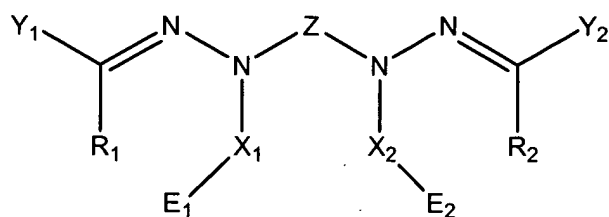
17. An electrophotographic imaging apparatus according to claim 16 wherein second charge transport material comprises an electron transport compound.

18. An electrophotographic imaging apparatus according to claim 10 further comprising a liquid toner dispenser.

19. An electrophotographic imaging process comprising;

(a) applying an electrical charge to a surface of an organophotoreceptor comprising an electrically conductive substrate and a photoconductive element on the electrically conductive substrate, the photoconductive element comprising

(i) a charge transport material having the formula



where Y_1 and Y_2 are, each independently, an arylamine group;

R_1 and R_2 comprise, each independently, H, an alkyl group, an alkenyl group, a heterocyclic group, or an aromatic group;

X_1 and X_2 , each independently, are bridging groups;

E₁ and E₂ are, each independently, an epoxy group; and

Z is a linking group comprising an alkyl group, an alkenyl group, a heterocyclic group, or an aromatic group; and

(ii) a charge generating compound.

5 (b) imagewise exposing the surface of the organophotoreceptor to radiation to
dissipate charge in selected areas and thereby form a pattern of charged and uncharged
5 areas on the surface;

(c) contacting the surface with a toner to create a toned image; and

(d) transferring the toned image to substrate.

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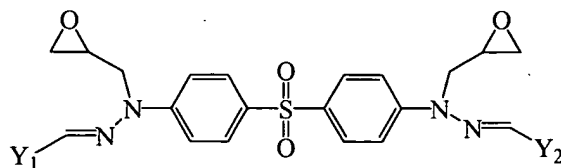
20. An electrophotographic imaging process according to claim 19 wherein Z comprises an aromatic group.

21. An electrophotographic imaging process according to claim 19 wherein Y₁
15 and Y₂ are, each independently, a carbazolyl group, an (N,N-disubstituted)arylamine
group, or a julolidinyl group.

22. An electrophotographic imaging process according to claim 19 wherein E₁ and E₂ are, each independently, an oxiranyl ring.

20

23. An electrophotographic imaging process according to claim 19 wherein the charge transport material is selected from the group of compounds represented by the following formula:



25

where Y₁ and Y₂ are, each independently, an arylamine group.

24. An electrophotographic imaging process according to claim 19 wherein X₁ and X₂, each independently, have the formula -(CH₂)_m-, branched or linear, where m is an

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wh

$$\mathbf{R}_1$$

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E, 3

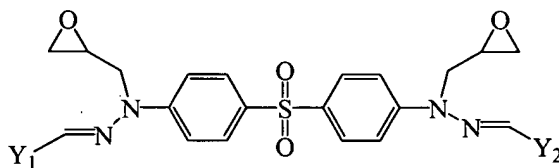
 Z is

30. A charge transport material according to claim 29 wherein Z comprises an aromatic group.

31. A charge transport material according to claim 29 wherein Y_1 and Y_2 are, each independently, a carbazolyl group, an (N,N-disubstituted)arylamine group, or a julolidinyl group.

32. A charge transport material according to claim 29 wherein E_1 and E_2 are, each independently, an oxiranyl ring.

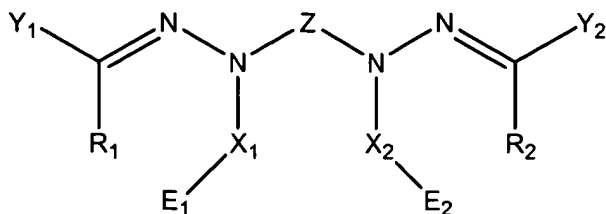
33. A charge transport material according to claim 29 wherein the charge transport material is selected from the group of compounds represented by the following formula:



where Y_1 and Y_2 are, each independently, an arylamine group.

34. A charge transport material according to claim 29 wherein X_1 and X_2 , each independently, have the formula $-(CH_2)_m-$, branched or linear, where m is an integer between 0 and 20, inclusive, and one or more of the methylene groups is optionally replaced by O, S, C=O, O=S=O, a heterocyclic group, an aromatic group, urethane, urea, an ester group, an NR_3 group, a CHR_4 group, or a CR_5R_6 group where R_3 , R_4 , R_5 , and R_6 comprise, each independently, H, hydroxyl group, thiol group, an alkyl group, an alkenyl group, a heterocyclic group, or an aromatic group

35. A polymeric charge transport material prepared by the reaction of a functional group in a polymeric binder with at least an epoxy group of a compound having the formula



where Y_1 and Y_2 are, each independently, an arylamine group;

R_1 and R_2 comprise, each independently, H, an alkyl group, an alkenyl group, a heterocyclic group, or an aromatic group;

5 X_1 and X_2 , each independently, are bridging groups;

E_1 and E_2 are, each independently, an epoxy group; and

Z is a linking group comprising an alkyl group, an alkenyl group, a heterocyclic group, or an aromatic group.

10 36. A polymeric charge transport material according to claim 35 wherein the functional group of the binder is selected from the group consisting of hydroxyl group, carboxyl group, an amino group, and thiol group.

15 37. A polymeric charge transport material according to claim 35 wherein a crosslinking agent is bonded between the epoxy group and the functional group of the binder.

38. A polymeric charge transport material according to claim 35 wherein Z comprises an aromatic group.

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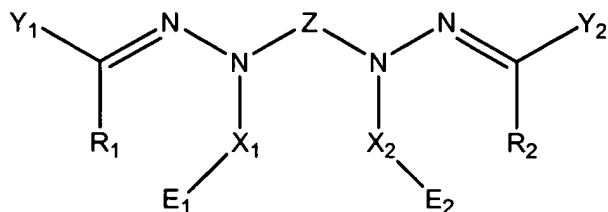
39. A polymeric charge transport material according to claim 35 wherein Y_1 and Y_2 are, each independently, a carbazolyl group, an (N,N-disubstituted)arylamine group, or a julolidinyl group.

25 40. A polymeric charge transport material according to claim 35 wherein X_1 and X_2 , each independently, have the formula $-(CH_2)_m-$, branched or linear, where m is an integer between 0 and 20, inclusive, and one or more of the methylene groups is optionally replaced by O, S, C=O, O=S=O, a heterocyclic group, an aromatic group,

urethane, urea, an ester group, an NR₃ group, a CHR₄ group, or a CR₅R₆ group where R₃, R₄, R₅, and R₆ comprise, each independently, H, hydroxyl group, thiol group, an alkyl group, an alkenyl group, a heterocyclic group, or an aromatic group

41. An organophotoreceptor comprising an electrically conductive substrate and a photoconductive element on the electrically conductive substrate, the photoconductive element comprising:

(a) a polymeric charge transport material prepared by the reaction of a functional group in a polymeric binder with at least an epoxy group of a compound having the formula



where Y₁ and Y₂ are, each independently, an arylamine group;

R₁ and R₂ comprise, each independently, H, an alkyl group, an alkenyl group, a heterocyclic group, or an aromatic group;

X_1 and X_2 , each independently, are bridging groups;

E₁ and E₂ are, each independently, an epoxy group; and

Z is a linking group comprising an alkyl group, an alkenyl group, a heterocyclic group, or an aromatic group; and

(b) a charge generating compound.

42. An organophotoreceptor according to claim 41 wherein the photoconductive element further comprises a second charge transport material.

43. An organophotoreceptor according to claim 42 wherein the second charge transport material comprises an electron transport compound.

44. An organophotoreceptor according to claim 41 wherein the functional group of the binder is selected from the group consisting of hydroxyl group, carboxyl group, an amino group, and thiol group.

5 45. An organophotoreceptor according to claim 41 wherein Z comprises an aromatic group.

 46. An organophotoreceptor according to claim 41 wherein Y_1 and Y_2 are, each independently, a carbazolyl group, an (N,N-disubstituted)arylamine group, or a
10 julolidinyl group.